
Safety of power transformers, power supply units and similar devices - Part 2-12:
Particular requirements for constant voltage transformers

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EUROPEAN STANDARD

EN 61558-2-12

NORME EUROPÉENNE

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English version

Safety of power transformers, power supply units and similar devices
Part 2-12: Particular requirements for constant voltage transformers
(IEC 61558-2-12:2001)

Sécurité des transformateurs, blocs
d'alimentation et dispositifs analogues
Partie 2-12: Règles particulières pour
les transformateurs à tension constante
(CEI 61558-2-12:2001)

Sicherheit von Transformatoren,
Netzgeräten und dergleichen
Teil 2-12: Besondere Anforderungen an
magnetische Spannungskonstanthalter
(IEC 61558-2-12:2001)

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This European Standard was approved by CENELEC on 2001-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 96/168/FDIS, future edition 1 of IEC 61558-2-12, prepared by IEC TC 96, Small power transformers, reactors and power supply units: Safety requirements, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61558-2-12 on 2001-09-01.

This part 2-12 is to be used in conjunction with EN 61558-1:1997.

This part 2-12 supplements or modifies the corresponding clauses of EN 61558-1. When a particular subclause of part 1 is not mentioned in this part 2-12, that subclause applies as far as is reasonable. Where this part 2-12 states "addition", "modification" or "replacement", the relevant text of part 1 is to be adapted accordingly.

In this standard, the following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

The words in **bold** in the text of the standard are defined in clause 3.

Subclauses which are additional to those in part 1 are numbered starting from 101.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2002-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-09-01

Endorsement notice

The text of the International Standard IEC 61558-2-12:2001 was approved by CENELEC as a European Standard without any modification.

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BASIC SAFETY PUBLICATION

**Sécurité des transformateurs, blocs d'alimentation
et dispositifs analogues –**

**Partie 2-12:
Règles particulières pour les transformateurs
à tension constante**

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**Safety of power transformers, power supply
units and similar devices –**

**Part 2-12:
Particular requirements for constant voltage
transformers**

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF POWER TRANSFORMERS, POWER SUPPLY UNITS AND SIMILAR DEVICES –

Part 2-12: Particular requirements for constant voltage transformers

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61558-2-12 has been prepared by IEC technical committee 96: Small power transformers, reactors and power supply units: Safety requirements.

It has the status of a group safety publication in accordance with IEC Guide 104: The preparation of safety publications and the use of basic safety publications and group safety publications (1997).

The text of this standard is based on the following documents:

FDIS	Report on voting
96/168/FDIS	96/175/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next revision.

This part 2-12 is intended to be used in conjunction with IEC 61558-1. It was established on the basis of the first edition (1997) of that standard.

This part 2-12 supplements or modifies the corresponding clauses in IEC 61558-1, so as to convert that publication into the IEC standard: *Particular requirements for constant voltage transformers*.

When a particular subclause of part 1 is not mentioned in this part 2-12, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text of part 1 shall be adapted accordingly.

In this standard, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

In the text of the standard the words in **bold** are defined in clause 3.

Subclauses which are additional to those in part 1 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or [SIST EN 61558-2-12:2002](https://standards.iteh.ai/catalog/standards/sist/fcb11e8f-4d45-451e-aaf5-9a59bdd2628f/sist-en-61558-2-12-2002)
- amended.

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SAFETY OF POWER TRANSFORMERS, POWER SUPPLY UNITS AND SIMILAR DEVICES –

Part 2-12: Particular requirements for constant voltage transformers

1 Scope

Replacement:

This International Standard deals with all aspects of safety such as electrical, thermal and mechanical.

This part of IEC 61558 applies to **stationary** or **portable**, single-phase or polyphase, air-cooled (natural or forced), **associated** or **independent**:

- **constant voltage auto-transformers**
- **constant voltage separating transformers**
- **constant voltage isolating transformers**
- **constant voltage safety isolating transformers**

having a **rated supply voltage** not exceeding 1 000 V a.c., a **rated frequency** not exceeding 500 Hz, an **internal operational frequency** not exceeding 30 kHz and no limitation of the **rated output**.

NOTE 1 The technological development of transformers might imply a need to increase the higher limit of the **internal operational frequency**, until such time, this standard may be used as a guide.

Constant voltage independent auto-transformers

- have a **no-load output voltage** and a **rated output voltage** exceeding 50 V a.c. or 120 V ripple-free d.c. and not exceeding 1 000 V a.c. or 1 415 V ripple-free d.c.;
- are used where no insulation between circuits is required by the installation rules or by the equipment specification.

Constant voltage associated auto-transformers

- have a **no-load output voltage** and a **rated output voltage** not exceeding 1 000 V a.c. or 1 415 V ripple-free d.c.

Constant voltage independent separating transformers

- have a **no-load output voltage** and a **rated output voltage** exceeding 50 V a.c. or 120 V ripple-free d.c. and not exceeding 1 000 V a.c. or 1 415 V ripple-free d.c.;
- are used where **double** or **reinforced insulation** between circuits is not required by the installation rules or by the appliance specification.

Constant voltage associated separating transformers

- have a **no-load output voltage** and a **rated output voltage** not exceeding 1 000 V a.c. or 1 415 V ripple-free d.c.

Constant voltage isolating transformers

- have a **no-load output voltage** and/or a **rated output voltage** exceeding 50 V a.c. or 120 V ripple-free d.c. and not exceeding 500 V a.c. or 708 V ripple-free d.c.; the **no-load output voltage** and the **rated output voltage** may exceed these limits in order to be in accordance with the national wiring rules or special purposes; however, they shall not exceed 1 000 V a.c. or 1 415 V ripple-free d.c.;
- are used where **double** or **reinforced insulation** between circuits is required by the installation rules or by the appliance specification.

Constant voltage safety isolating transformers

- have a **no-load output voltage** and a **rated output voltage** not exceeding 50 V a.c. or 120 V ripple-free d.c.;
- are used where **double** or **reinforced insulation** between circuits is required by the installation rules or by the appliance specification.

This standard is applicable to **dry-type constant voltage transformers**. The windings may be encapsulated or non-encapsulated.

NOTE 2 For **constant voltage transformers** filled with liquid dielectric or pulverized material, such as sand, additional requirements are under consideration.

NOTE 3 Attention is drawn to the fact that

- for transformers intended to be used in tropical countries, special requirements may be necessary;
- in locations where special environmental conditions prevail, particular requirements may be necessary.

NOTE 4 For higher **no-load output voltages** or circuit voltages, additional requirements are necessary but this standard may be used as a guide.

2 Normative references

[SIST EN 61558-2-12:2002](#)

This clause of part 1 is applicable.

3 Definitions

This clause of part 1 is applicable except as follows:

Addition:

3.101

constant voltage transformer

transformer intended to limit the influence of the input voltage variations

NOTE This type of transformer may also limit the influence of transients.

3.102

regulation tolerance

deviation in per cent of the **rated output voltage** when the **constant voltage transformer** is supplied within the **rated supply voltage** variation

3.103

internal operational frequency

frequency produced within a constant voltage transformer, for example, operating in secondary switch mode

4 General requirements

This clause of part 1 is applicable except as follows:

Addition:

4.101 Where part 1 is applicable, the word "transformer" means "**constant voltage transformer**".

5 General notes on tests

This clause of part 1 is applicable.

6 Ratings

This clause of part 1 is applicable except as follows:

Addition:

6.101 The **rated output voltage** shall not exceed

- 1 000 V a.c. or 1 415 V ripple-free d.c. for **constant voltage auto-transformers** and **constant voltage separating transformers**;

NOTE 1 For a.c. preferred values for the **rated output voltage** are 72 V, 120 V, 230 V, 400 V, 440 V and 660 V.

- 500 V a.c. or 708 V ripple-free d.c. for **constant voltage isolating transformers**; however, for **constant voltage isolating transformers**, the **rated output voltage** may be up to 1 000 V a.c. or 1 415 V ripple-free d.c. in accordance with the national wiring rules or designed for special purposes;

NOTE 2 For a.c. preferred values for the **rated output voltage** are 72 V, 120 V, 230 V, 400 V and 440 V.

- 50 V a.c. and/or 120 V ripple-free d.c. for **constant voltage safety isolating transformers**;

NOTE 3 For a.c. preferred values for the **rated output voltage** are 6 V, 12 V, 24 V, 42 V and 48 V.

The **rated output voltage** shall exceed

- 50 V a.c. or 120 V ripple-free d.c. for **constant voltage independent auto-transformers** and **separating transformers**;
- 50 V a.c. or 120 V ripple-free d.c. for **constant voltage isolating transformers**.

6.102 The **rated output** is not limited.

6.103 The **rated frequency** shall not exceed 500 Hz.

6.104 The rated value of output **regulation tolerance** shall be given at **rated supply voltage** range, **rated output** and power factor = 1.